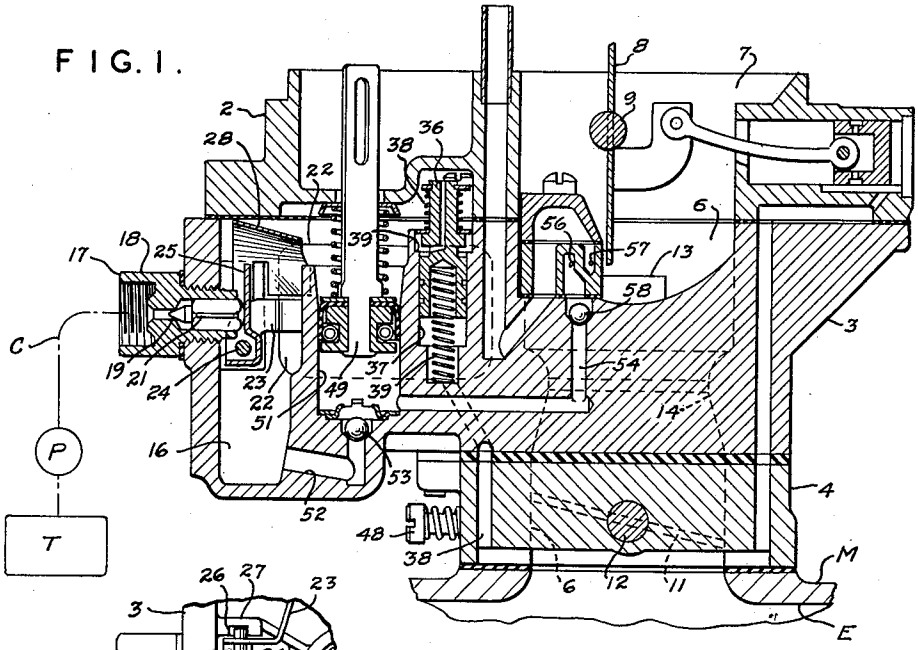
Jan. 1, 1963 O. O. NEWMAN 3,071,354

CARBURETOR

Filed May 25, 1960

FIG. 1.



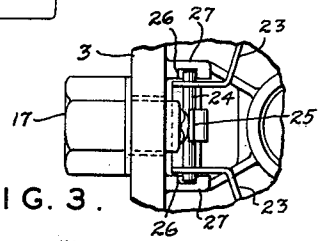
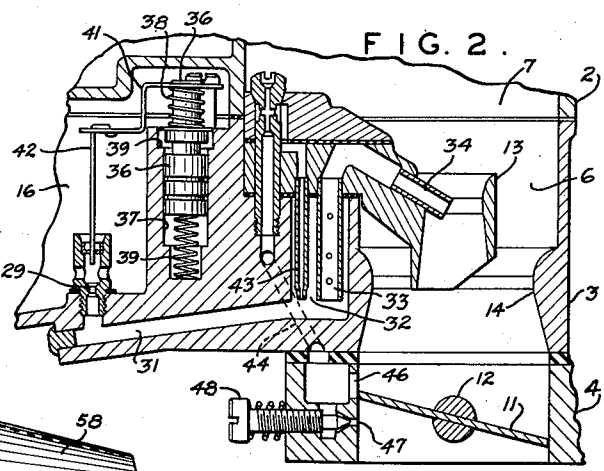




FIG. 3.

FIG. 2.



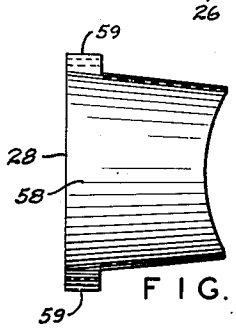




FIG. 4.

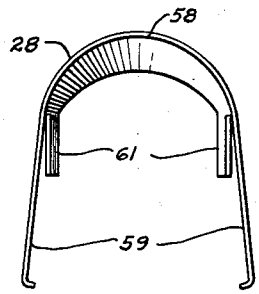



FIG. 5.

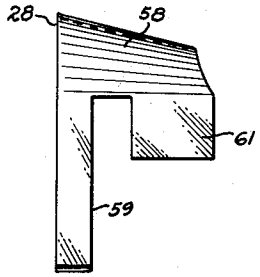



FIG. 6.

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United States Patent Office 3,071,354 Patented Jan. 1, 1963



3,071,354

# CARBURETOR

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5 Claims. (Cl. 261—34)

This invention relates to carburetors for internal combustion engines and more particularly to means for controlling the flow of fuel into a fuel bowl.

In conventional fuel systems for internal combustion engines, fuel is supplied from a fuel tank to a carburetor fuel bowl by means of a pump, a substantially constant fuel level being maintained in the bowl by means of a float actuated needle valve. A float is secured to an arm mounted for pivotal movement on a pivot pin, and a finger is provided on the arm for engagement against the end of the needle to move the latter relative to its seat responsive to vertical movements of the float. When the needle valve is opened, the pressurized fuel from the pump is directed against the needle engaging finger and deflected therefrom throughout the fuel bowl. Some of the fuel thus entering the fuel bowl is sprayed onto the top of the float and causes the latter to open the needle valve when additional fuel is not required. Some of the fuel is also sprayed into a vacuum step-up cylinder and is drawn therethrough into the mixture conduit to cause an excessive richness of the fuel mixture supplied to the engine and a resultant decrease in economy of operation.

It is, therefore, an object of the invention to provide means to prevent the spraying of fuel from the needle valve onto the float or into the vacuum step-up cylinder.

Another object of the invention resides in the provision of a deflector to confine the spraying of inlet fuel to a predetermined area within the fuel bowl.

A further object of the invention resides in the provision of a deflector formed and arranged to direct some of the incoming fuel into the accelerator pump cylinder to insure a wet piston and cylinder wall to reduce friction therebetween.

Another object of the invention resides in the provision of a deflector provided with spaced legs to engage and hold the ends of the float lever pivot pin in recesses formed in the float bowl.

The invention embodies other novel features, details of construction and arrangement of parts which are hereinafter set forth in the specification and claims and illustrated in the accompanying drawing, forming part thereof, wherein:

FIG. 1 is a vertical section showing a carburetor embodying feautures of the invention.

FIG. 2 is a fragmentary section illustrating the main and idle fuel systems.

FIGURE 3 is a fragmentary plan view illustrating the manner in which the ends of the pivot pin are mounted in recesses provided in the fuel bowl.

FIG. 4 is a top plan view illustrating the combined deflector and pivot pin retainer.

FIG. 5 is an end elevation of same.

FIG. 6 is a side elevation of same.

Referring now to the drawing for a better understanding of the invention, a dual downdraft carburetor is shown as comprising an air horn section 2, a main body section 3, and a throttle section 4 secured together and forming two mixture conduits 6—6 arranged side by side and having a common air inlet passage 7. A choke valve 8 is secured to a shaft 9 journaled in the air horn section, and two throttle valves 11—11 are secured to a shaft 12 journaled in the throttle section 4. Each mixture conduit 6 is provided with a primary venturi 13 and a main venturi 14. The throttle section 4 is adapted to be bolted



to the intake manifold M of an internal combustion engine E.

The main body section 3 is formed with a fuel bowl 16 having a float actuated fuel inlet valve 17 mounted thereon to control the flow of fuel from a tank T and pump P through a conduit C into the fuel bowl. The valve 17 comprises a body 18 secured in a threaded opening in the wall of the fuel bowl and provided with a valve seat 19 for engagement by the tapered end of a needle valve member 21.

Two floats 22—22 are secured to a float arm 23 journaled on a pivot pin 24, the ends of the pin being mounted at the lower ends of vertically disposed recesses 26—26 formed in bosses 27—27 provided on the fuel bowl. The pivot pin 24 is secured against displacement from the recesses by means of a combined pin retainer and fuel deflector member 28 as hereinafter described. A finger 25 is provided on the arm 23 for engagement against the valve member 21.

As illustrated in FIG. 2, the carburetor is provided with two identical main fuel systems leading from the fuel bowl 16 to their respective mixture conduits 6—6. Each main fuel system comprises a metering orifice 29 leading from the fuel bowl to a main fuel passage 31 communicating with a fuel well 32. A main fuel metering tube 33 leads upwardly from the fuel well 32 to a main fuel nozzle 34 discharging into its respective primary venturi 13.

The carburetor is provided with a two stage vacuum step-up device comprising a piston 36 mounted in a cylinder 37 provided with a suction passage 38 leading to the mixture conduits 6—6 posterior to the throttle valve 11—11. A primary stage compression spring 39 is provided in the cylinder 37 to yieldably resist downward movement of the piston 36, and a second stage compression spring 38 is mounted on the piston for engagement against a shoulder 39 during downward movement of the piston. A rod supporting bracket 41 is secured to the upper end of the piston 36 to carry two metering rods 42—42 for vertical movement relative to their respective metering orifices 29—29 to control the flow of fuel therethrough.

Identical idle fuel systems are provided for their respective mixture conduits 6—6, each system being shown as comprising an idle fuel metering tube 43 leading from its fuel well 32 to an idle fuel passage 44 terminating at idle ports 46 and 47. The idle ports 47—47 are provided with idle adjustment screws 48.

An accelerating pump interposed between the fuel inlet valve 17 and the step-up device is shown as comprising a piston 49 mounted in a cylinder 51 and adapted to be actuated responsive to throttle movement by means of a suitable linkage interconnecting the piston and throttle shaft, as shown in applicant's Patent No. 2,919,908, issued January 5, 1960, which is incorporated herein by reference. The pump is provided with an inlet passage 52 leading from the fuel bowl to the cylinder 51, the passage being provided with an inlet check valve 53. An outlet passage 54 leads from the cylinder 51 to two ports 56—56 arranged to discharge fuel through windows 57—57 into their respective mixture conduits 6—6, said passage having an outlet check valve 58 therein.

The combined pin retainer and fuel deflector member 28 is shown as comprising an arcuate body 58 having downwardly projecting legs 59—59 and side walls 61—61. The legs are adapted to be inserted downwardly into their respective recesses 26—26 for abutting engagement against end portions of the pivot pin 24 prior to assembly of the air horn section 2 on the main body section 3. After assembly, the air horn section engages and prevents displacement of the member 28.

During operation of a carburetor without a deflector

member 28 thereon, it will be noted that fuel under pressure from the pump P will pass through the valve 17 and be sprayed upwardly and laterally by the finger 25, causing the fuel to strike the top side of the floats 22—22 and to enter the upper end of the step-up cylinder 37. The fuel sprayed onto the floats tends to cause the floats to fluctuate between their valve opening and closing positions, while fuel sprayed into the cylinder 37 is drawn past the piston 36 and through the passage 38 into the mixture conduits.

By providing the carburetor with a combined pin retainer and deflector member 28 having an arcuate body portion 58 and side walls 61—61 extending over the finger 25 and along the sides thereof, fuel is directed downwardly into the fuel bowl 16, with some of the fuel entering the top of the pump cylinder 51 to provide a wet pump.

Certain structures have been described herein which will fulfill all the objects of the present invention, but it is contemplated that other modifications will be obvious to those skilled in the art which come within the scope of the invention as defined by the appended claims.

I claim:

1. In a carburetor, a fuel bowl having a fuel inlet opening, a needle valve mounted in said opening, said bowl having opposed vertically extending recesses open at their upper ends and formed with seats at their lower ends, a pivot pin for insertion through the open ends of said recesses and having its ends seated in said recesses on said seats, a float lever fixed to said float and journaled on said pin and having an upwardly projecting finger to engage and operate said valve, a combined pivot pin retainer and fuel deflector member comprising an arcuate body extending over said finger to confine a spray of fuel from said finger to a predetermined portion of the fuel bowl, a pair of legs depending from opposite sides of said body and each of said legs seated in a different one of said recesses in abutting engagement against said respective pin end to retain said pin on said seats.

2. In a carburetor, a fuel bowl having a fuel inlet opening, a needle valve mounted in said opening, said bowl having opposed vertically extending recesses open at their upper ends and formed with seats at their lower ends, a pivot pin for insertion through the open ends of said recesses and having its ends seated in said recesses on said seats, a float lever fixed to said float and journaled on said pin and having an upwardly projecting finger to engage and operate said valve, a combined pivot pin retainer and fuel deflector member comprising an arcuate body extending over said finger to confine a spray of fuel from said finger to a predetermined portion of the fuel bowl, a pair of legs depending from opposite sides of said body and each of said legs seated in a different one of said recesses in abutting engagement against said respective pin end to retain said pin on said seats, said carburetor including a fuel bowl cover having a portion extending over and engaging said arcuate retainer body to prevent removal of said retainer legs from said recesses.

3. A carburetor comprisng a fuel bowl having a fuel inlet opening through the side wall thereof, a needle valve mounted in said opening, a float in said fuel bowl, a pair of opposed vertically extending recesses formed in said fuel bowl wall with each one of said recesses spaced laterally from said inlet opening and on an opposite side



of said opening, said recesses being at their upper ends and formed with seats at their lower ends, a pivot pin for insertion through the open ends of said recesses and having its ends seated in said recesses on said seats, a float lever fixed to said float and journaled on said pin and having an upwardly projecting finger to engage and operate said valve, a combined pivot pin retainer and fuel deflector member comprising an arcuate body extending over said finger to direct a spray of fuel from said finger away from said float, a pair of legs depending from opposite sides of said body and each of said legs seated in a different one of said recesses in abutting engagement against said respective pin end to retain said pin on said seats.

4. A carburetor comprising a fuel bowl having a fuel inlet opening through the side wall thereof, a needle valve mounted in said opening, a float in said fuel bowl, a pair of opposed vertically extending recesses formed in said fuel bowl wall with each one of said recesses spaced laterally from said inlet opening and on an opposite side of said opening, said recesses being open at their upper ends and formed with seats at their lower ends, a pivot pin for insertion through the open ends of said recesses and having its ends seated in said recesses on said seats, a float lever fixed to said float and journaled on said pin and having an upwardly projecting finger to engage and operate said valve, an accelerating pump cylinder extending upwardly from the bottom of said fuel bowl and having an open end positioned adjacent to said inlet opening, an accelerating pump piston operatively mounted for axial movement within said cylinder, a combined pivot pin retainer and fuel deflector member comprising an arcuate body extending over said finger between said inlet opening and said open cylinder end to confine a spray of fuel from said finger into said accelerating cylinder to wet said accelerating pump piston, a pair of legs depending from opposite sides of said body and each of said legs seated in a different one of said recesses in abutting engagement against said respective pin end to retain said pin on said seats.

5. A carburetor comprising a fuel bowl having a fuel inlet opening through the side wall thereof, a needle valve mounted in said opening, a float in said fuel bowl, a pivot pin supported by said bowl wall, a float lever fixed to said float and journaled on said pin and having upwardly projecting finger to engage and operate said valve, an accelerating pump cylinder extending upwardly from the bottom of said fuel bowl and having an open end positioned adjacent to said inlet opening, an accelerating pump piston operatively mounted for axial movement within said cylinder, a fuel deflector member comprising an arcuate body extending over said finger between said inlet opening and said open cylinder end to confine a spray of fuel from said finger into said accelerating cylinder to wet said accelerating pump piston.

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